

Remarks

Applicant respectfully requests reconsideration of this application as amended. The specification has been amended to correct minor errors. Claims 2-6 have been amended. No claims have been cancelled or added. Therefore, claims 2-6, 8-12, 14-18, and 21-25 are presented for examination.

35 U.S.C. §101 Rejection

Claims 2-6 stand rejected under 35 U.S.C. § 101 because the claimed invention is directed to non-statutory matter. Claims 2-6 have been amended to appear in better form for allowance. More specifically, claims 2-6 now recite a “computer-implemented method.” As such, claims 2-6 are directed to a “useful, concrete, and tangible result.” Therefore, applicant respectfully requests the 35 U.S.C. §101 rejection be withdrawn.

35 U.S.C. §103(a) Rejection

Claims 2-6, 8-12, 14-18 and 21-25 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Cramer et al. (U.S. Patent No. 5,107,418) in view of Archambault (U.S. Patent No. 6,173,444). Applicant submits that the present claims are patentable over Cramer in view of Archambault.

Cramer discloses a method for representing scalar data dependencies for an optimizing compiler wherein a global scalar data dependence graph is created to represent all of the scalar objects in an entire program. More specifically, scalar data dependencies are represented by a use-definition chain, a definition-use chain, or a definition-definition chain. Also, the representation of scalar data dependencies is

created for the entire program and is maintained during the entire compilation or assembly of the program. (Cramer at col. 2, ll. 5-25.)

Archambault discloses a method that reduces the size of alias sets associated with program pointers through the use of a pointer alias graph. Standard data flow gathering techniques are used to develop the pointer alias graph. The nodes in the graph represent either a definition of a pointer variable or a use of a pointer variable, and each node has an associated alias set. The initial alias sets for definition nodes is the right hand side of the pointer variable assignment operation, and the initial alias set for use nodes is the value of the object at that execution point. Location information, the basic block number (relative to the flow graph) and position within the basic block, is saved for each node. (Archambault at col. 5, ll. 4-17).

Claim 1 recites:

A computer-implemented method, comprising:
assigning a definition-node for one or more definition statements in an intermediate language program;
assigning a use-node for one or more use statements in the intermediate language program;
assigning an alias-node for one or more aliases
representing an equivalence class of memory accesses;
introducing an edge into a dependence flow graph
connecting each definition-node to the alias-node
corresponding to the alias representing the equivalence class to which the definition-node belongs; and
introducing an edge in the dependence flow graph
connecting each use-node to the alias-node corresponding to the alias representing the equivalence class to which the use-node belongs.

Applicant submits that Cramer does not disclose or suggest assigning an alias node for one or more aliases, and then introducing an edge into a dependence flow graph connecting definition-nodes to the alias node and introducing another edge in the

dependence flow graph connecting use-nodes to the same alias node, as recited by claim

1. The Examiner states that Cramer discloses assigning an alias node at steps 613 and 615 of Figure 6. (Final Office Action at page. 4.) The Examiner further states that Cramer discloses introducing edges between definition nodes and the alias node, as well as introducing edges between use nodes and the alias node at steps 651-618 of Figure 6. (Id.)

However, these steps in Cramer only disclose extracting alias information between dependence nodes in a chain (steps 613 & 615) and connecting these dependence nodes together based on the aliasing between the dependence nodes (617). There is no disclosure anywhere in Cramer of creating a separate alias node and creating edges in a dependence flow graph between definition nodes and the alias node, and between use-nodes and the alias node. Nor can applicant find any disclosure or suggestion of such a feature in Archambault.

Therefore, neither Cramer nor Archambault, individually or in combination, disclose or suggest the features of claim 2. As such, claim 2 is patentable over Cramer in view of Archambault. Claims 3-6 and 23 depend from claim 1 and include additional limitations. Therefore, claims 2-6 and 23 are also patentable over Cramer in view of Archambault.

Claims 8, 14, and 21 each recite, in part, assigning an alias node for one or more aliases, and then introducing an edge into a dependence flow graph connecting definition-nodes to the alias node and introducing another edge in the dependence flow graph connecting use-nodes to the same alias node. As discussed above, neither Cramer nor Archambault disclose or suggest such features. Therefore, claims 8, 14, and 21 are

patentable over Cramer in view of Archambault for the reasons discussed above with respect to claim 1. Claims 9-12 and 24 depend from claim 8, claims 15-18 and 25 depend from claim 14, and claim 22 depends from claim 21. As dependent claims necessarily include the limitations of their independent claims, claims 9-12, 15-18, 22, 24, and 25 are also patentable over Cramer in view of Archambault.

Applicant respectfully submits that the rejections have been overcome and that the claims are in condition for allowance. Accordingly, applicant respectfully requests the rejections be withdrawn and the claims be allowed.

The Examiner is requested to call the undersigned at (303) 740-1980 if there remains any issue with allowance of the case.

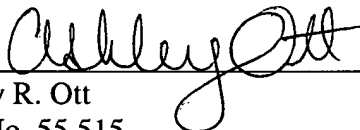
Applicant respectfully petitions for an extension of time to respond to the outstanding Office Action pursuant to 37 C.F.R. § 1.136(a) should one be necessary. Please charge our Deposit Account No. 02-2666 to cover the necessary fee under 37 C.F.R. § 1.17(a) for such an extension.

Please charge any shortage to our Deposit Account No. 02-2666.

Respectfully submitted,

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